THAT WHICH IS CLAIMED:

1. A cell population of $ALDH^{br}CD105^{+}$ stem cells, wherein said cells are capable of multilineage development.

2. The cell population of claim 1, wherein said stem cells are derived from bone marrow.

3. The cell population of claim 1, wherein at least 10% of the cells within said population also express at least one cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

4. The cell population of claim 1, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

5. The cell population of claim 1, wherein greater than about 60% of the cells within the population express the cell surface marker CD105.

6. The cell population of claim 1, wherein at least 10% of the cells within the population are side scatter channel low (SSC^{lo}).

7. The cell population of claim 1, wherein at least 10% of the cells within the population are side scatter channel high (SSC^{hi}).

8. The cell population of claim 1, wherein said population is capable of engrafting a mammal.

9. The cell population of claim 8, wherein said population is capable of engrafting hematopoietic cells.

10. The cell population of claim 8, wherein said population is capable of engrafting a SCID/NOD mouse spleen with human B cell precursors.

11. The cell population of claim 8, wherein said population is capable of engrafting human thymus tissue transplanted into SCID/hu Thy mice with T cell precursors.

12. The cell population of claim 11, wherein said T cell precursors are capable of developing into T cells expressing CD4 or CD8.

13. The cell population of claim 8, wherein said population is capable of engrafting mesenchymal cells.

14. The cell population of claim 13, wherein said population is capable of engrafting tissue selected from the group consisting of bone marrow stroma, bone, cartilage, tendon, fat, smooth muscle, cardiac muscle, skeletal muscle, nerves, oligodendrocytes, fibroblasts, endothelium, and combinations thereof.

15. A composition comprising the cell population of claim 1 in a pharmacologically acceptable carrier.

16. A method of reconstituting blood tissue in a patient in need thereof, said method comprising introducing the cell population of claim 1 into said patient, wherein said cells are capable of engraftment.

17. The method of claim 16, wherein said patient is in need of treatment for bone marrow ablation.

18. The method of claim 16, wherein said patient is in need of treatment for cancer.

19. The method of claim 16, wherein said patient is in need of treatment for sequelae related to cancer therapy.

20. The method of claim 16, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

21. The method of claim 16, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

22. The method of claim 16, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

23. The method of claim 16, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

24. A method of repairing or regenerating a mesenchymal tissue in a patient in need thereof, said method comprising introducing the cell population of claim 1 into said patient.

25. The method of claim 24, wherein said mesenchymal tissue is selected from the group consisting of bone, cartilage, fat, endothelium, muscle, and combinations thereof.

26. The method of claim 25, wherein said cell population of claim 1 promotes neovascularization.

27. The method of claim 24, wherein said population is introduced to correct a bone defect.

28. The method of claim 24, wherein said population is introduced to correct a cartilage defect.

29. The method of claim 24, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

30. The method of claim 24, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

31. The method of claim 24, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

32. The method of claim 24, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

33. A method of inducing immunological tolerance in a patient in need thereof, said method comprising introducing said cell population of claim 1 into said patient, wherein said cells are capable of downregulating alloantigen recognition and response.

34. The method of claim 33, wherein said population is introduced to prevent graft versus host disease.

35. The method of claim 33, wherein said population is introduced to ameliorate graft versus host disease.

36. The method of claim 33, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

37. The method of claim 33, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

38. The method of claim 33, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

39. The method of claim 33, wherein at least 10% of the cells within said population are side scatter high (SSC^{hi}).

40. A method of producing neurons or oligodendrocytes in a patient in need thereof, said method comprising introducing the cell population of claim 1 into said patient, wherein said cells are capable of differentiating into nervous tissue.

41. The method of claim 40, wherein said population is introduced to prevent neural degeneration.

42. The method of claim 40, wherein said population is introduced to ameliorate neural damage or degeneration.

43. The method of claim 40, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

44. The method of claim 40, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

45. The method of claim 40, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

46. The method of claim 40, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

47. A method of producing cardiomyocytes in a patient in need thereof, said method comprising introducing the cell population of claim 1 into said patient, wherein said cells are capable of differentiating into heart tissue.

48. The method of claim 47, wherein said population is introduced to prevent ischemic heart injury.

49. The method of claim 47, wherein said population is introduced to ameliorate ischemic heart injury.

50. The method of claim 47, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

51. The method of claim 47, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

52. The method of 47, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

53. The method of 47, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

54. A cell population of bone-marrow-derived, $ALDH^{br}$ stem cells, wherein said cells are capable of multilineage development.

55. The cell population of claim 54, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

56. The cell population of claim 55, wherein at least 10% of the cells within said population express at least CD105.

57. The cell population of claim 56, wherein at least 40% of the cells within said population express at least CD105.

58. The cell population of claim 54, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

59. The cell population of claim 54, wherein at least 10% of the cells within the population are side scatter channel low (SSC^{lo}).

60. The cell population of claim 54, wherein at least 10% of the cells within the population are side scatter channel high (SSC^{hi}).

61. The cell population of claim 54, wherein said population is capable of engrafting a mammal.

62. The cell population of claim 61, wherein said population is capable of engrafting hematopoietic cells.

63. The cell population of claim 61, wherein said population is capable of engrafting a SCID/NOD mouse spleen with human B cell precursors.

64. The cell population of claim 61, wherein said population is capable of engrafting human thymus tissue transplanted into SCID/hu Thy mice with T cell precursors.

65. The cell population of claim 64, wherein said T cell precursors are capable of developing into T cells expressing CD4 or CD8.

66. The cell population of claim 61, wherein said population is capable of engrafting mesenchymal cells.

67. The cell population of claim 66, wherein said population is capable of engrafting tissue selected from the group consisting of bone marrow stroma, bone, cartilage, tendon, fat, smooth muscle, cardiac muscle, skeletal muscle, nerves, oligodendrocytes, fibroblasts, endothelium, and combinations thereof.

68. A composition comprising the cell population of claim 54 in a pharmacologically acceptable carrier.

69. A method of reconstituting blood tissue in a patient in need thereof, said method comprising introducing the cell population of claim 54 into said patient, wherein said cells are capable of engraftment.

70. The method of claim 69, wherein said patient is in need of treatment for bone marrow ablation.

71. The method of claim 69, wherein said patient is in need of treatment for cancer.

72. The method of claim 69, wherein said patient is in need of treatment for sequelae related to cancer therapy.

73. The method of claim 69, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

74. The method of claim 73, wherein at least 10% of the cells within said population express at least CD105.

75. The method of claim 73, wherein at least 40% of the cells within said population express at least CD105.

76. The method of claim 69, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

77. The method of claim 69, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

78. The method of claim 69, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

79. A method of repairing or regenerating a mesenchymal tissue in a patient in need thereof, said method comprising introducing the cell population of claim 54 into said patient.

80. The method of claim 79, wherein said mesenchymal tissue is selected from the group consisting of bone, cartilage, fat, endothelium, muscle, and combinations thereof.

81. The method of claim 80, wherein said cell population promotes neovascularization.

82. The method of claim 79, wherein said population is introduced to correct a bone defect.

83. The method of claim 79, wherein said population is introduced to correct a cartilage defect.

84. The method of claim 79, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

85. The method of claim 84, wherein at least 10% of the cells within said population express at least CD105.

86. The method of claim 84, wherein at least 40% of the cells within said population express at least CD105.

87. The method of claim 79, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3, CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

88. The method of claim 79, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

89. The method of claim 79, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

90. A method of inducing immunological tolerance in a patient in need thereof, said method comprising introducing the cell population of claim 54 into said patient, wherein said cells are capable of downregulating alloantigen recognition and response.

91. The method of claim 90, wherein said population is introduced to prevent graft versus host disease.

92. The method of claim 90, wherein said population is introduced to ameliorate graft versus host disease.

93. The method of claim 90, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

94. The method of claim 93, wherein at least 10% of the cells within said population express at least CD105.

95. The method of claim 93, wherein at least 40% of the cells within said population express at least CD105.

96. The method of claim 90, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3,

CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

97. The method of claim 90, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

98. The method of claim 90, wherein at least 10% of the cells within said population are side scatter high (SSC^{hi}).

99. A method of producing neurons or oligodendrocytes in a patient in need thereof, said method comprising introducing the cell population of claim 54 into said patient, wherein said cells are capable of differentiating into nervous tissue.

100. The method of claim 99, wherein said population is introduced to prevent neural degeneration.

101. The method of claim 99, wherein said population is introduced to ameliorate neural damage or degeneration.

102. The method of claim 99, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

103. The method of claim 102, wherein at least 10% of the cells within said population express at least CD105.

104. The method of claim 102, wherein at least 40% of the cells within said population express at least CD105.

105. The method of claim 99, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3,

CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

106. The method of claim 99, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

107. The method of claim 99, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

108. A method of producing cardiomyocytes in a patient in need thereof, said method comprising introducing the cell population of claim 54 into said patient, wherein said cells are capable of differentiating into heart tissue.

109. The method of claim 108, wherein said population is introduced to prevent ischemic heart injury.

110. The method of claim 108, wherein said population is introduced to ameliorate ischemic heart injury.

111. The method of claim 108, wherein at least 10% of the cells within said population express a cell surface marker selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof, wherein said cells are capable of multilineage development.

112. The method of claim 111, wherein at least 10% of the cells within said population express at least CD105.

113. The method of claim 111, wherein at least 40% of the cells within said population express at least CD105.

114. The method of claim 108, wherein said population is substantially free of cells expressing cell surface markers selected from the group consisting of CD3,

CD7, CD10, CD13, CD14, CD19, CD33, CD35, CD56, CD127, CD138, glycophorin A, and combinations thereof.

115. The method of claim 108, wherein at least 10% of the cells within said population are side scatter channel low (SSC^{lo}).

116. The method of claim 108, wherein at least 10% of the cells within said population are side scatter channel high (SSC^{hi}).

117. A method of screening a compound for its ability to promote differentiation, growth, cytoxicity, apoptosis, or engraftment of stem cells, comprising the steps of:

a) isolating $ALDH^{br}$ stem cells from a stem cell source;

b) further selecting a subpopulation of cells expressing CD105; and

c) contacting said subpopulation of cells with said compound.

118. A method of screening a compound for its ability to promote differentiation, growth, cytoxicity, apoptosis, or engraftment of stem cells, comprising the steps of:

a) isolating $ALDH^{br}$ stem cells from bone marrow;

b) further selecting a subpopulation of $ALDH^{br}$ stem cells expressing markers selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof; and

c) contacting said subpopulation of $ALDH^{br}$ cells with said compound.

119. A kit comprising a detectable ALDH substrate disposed in a container, and antibodies specific for cell surface markers selected from the group consisting of CD34, CD38, CD41, CD45, CD105, CD117, CD133, CD135, HLA-DR, and combinations thereof, disposed in a container.

120. The kit of claim 119, wherein the ALDH substrate is BODIPY aminoacetaldehyde diethyl acetal or BODIPY aminoacetaldehyde.